

**REMARKS**

Favorable reconsideration of this application, in view of the above amendments and in light of the following remarks and discussion, is respectfully requested.

Claims 4, 6, 7, and 9 are currently pending in the application; Claims 4, 6, and 7 having been amended by way of the present response. Claims 1-3, 5, 8, and 10-22 have been canceled without prejudice or disclaimer.

Claim 9 has been allowed.

Claim 4 was indicated as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 4 has been rewritten in independent form including all of the limitations of base Claim 2, and therefore Claim 4 is in condition for allowance.

At the outset, the Applicants note that 35 U.S.C. 102(a) states that a person shall be entitled to a patent unless the invention was known or used by others in this country... before the invention thereof by the applicant for patent. (Emphasis added.)

In the outstanding Office Action, Claim 2 was rejected under 35 U.S.C. 102(b) as being anticipated by "Admitted Prior Art" (hereinafter referred to as "APA"). Claim 2 has been canceled without prejudice or disclaimer, thereby rendering this rejection moot at this stage.

Claims 6 and 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Danielson et al. (U.S. Patent No. 5,663,993). For the reasons discussed below, the Applicants request the withdrawal of this obviousness rejection.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicants submit that a *prima facie* case of obviousness cannot be established in the present case because the cited references, either when taken singularly or in combination, do not teach or suggest all of the limitations recited in Claim 6.

Claim 6 of the present application advantageously recites a fuel assembly comprising, among other features, a thimble screw comprising a drain hole having a first large inner diameter portion at a distal end side, a second large inner diameter portion at a seat side, and a small inner diameter portion between the first and the second large inner diameter portions, the spot facing hole being disposed on the seat side, thereby flow rate resistance of the coolant is not influenced while the nuclear reactor operates, and pressure drop for the flow rate of the coolant is increased and decelerating effect of the control rods is improved during the scram mode. The Applicants submit that the cited references, either when taken singularly or in combination, do not teach or suggest all of the above limitations.

The Official Action indicates that the Danielson et al. reference and the present invention are both concerned with coolant flow regulation within subcomponents of nuclear fuel assemblies, and that the class and subclass of the present invention does not separate

boiling water reactors (BWRs) from pressurized water reactor (PWRs), and thus the argument that the art is non-analogous is “untenable.” (Page 7 of the Official Action.) The Applicants note that MPEP 2141.01(a) II. contradicts such an assertion. While PTO classification is “some evidence” of analogy, it is clearly not definitive evidence of analogy. The MPEP notes that similarities and differences in structure and function carry more weight than PTO classifications with regard to whether or not art is analogous or non-analogous. As discussed below, the Applicants respectfully submit that the, not only does the Danielson et al. reference and the APA, either when taken singularly or in combination, fail to disclose all of the limitations recited in Claim 6, but also one of ordinary skill in the art would not have looked to the water rod of the BWR structure of the Danielson et al. reference to solve problems associated with a thimble screw of a PWR due to differences in structure and function between BWRs and PWRs.

The fuel assembly of amended Claim 6 comprises a thimble screw having a drain hole having a first large inner diameter portion at a distal end side; a second large inner diameter portion at a seat side, and a small inner diameter portion between the first and the second large inner diameter portions, thereby flow rate resistance of the coolant is not influenced while the nuclear reactor operates, and pressure drop for the flow rate of the coolant is increased and decelerating effect of the control rods is improved during the scram mode. Thus, the invention provides the advantage of reducing the pressure loss with respect to the coolant during nuclear reactor operation, and increasing pressure loss during the scram mode to decelerate the insertion velocity of the control rods.

On the other hand, the Danielson et al. reference describes a flow path of a water rod of a BWR, and does not relate to a thimble screw of a PWR. The water rod of the BWR is different from the thimble screw of the PWR, and control rods are not inserted during a scram mode. Thus, as for the BWR, it is not required to provide a configuration to decelerate the insertion velocity of the control rods during the scram mode, and therefore one of ordinary skill in the art would not look to a BWR for the teaching of such a configuration. The Danielson et al. reference does not disclose a structure or technique related to the shape of a flow path for decelerating the velocity of the control rods during the scram mode.

Thus, one of ordinary skill in the art would not have looked to the Danielson et al. reference to solve any problems associated with the configuration shown in Figures 2A and 2B, since the two different types of reactors are essentially non-analogous art with respect to the features being combined, and would not have thought to combine these features. A person of ordinary skill in the art cannot conceive the invention of Claim 6 even by combining the APA with the technique of the Danielson et al. reference, which does not disclose the technique for decelerating the velocity of the control rods during the scram mode.

Thus, Claim 6 of the present application is not obvious from Figures 2A and 2B and the Danielson et al. reference even to a person skilled in the art. Since a *prima facie* case of obviousness cannot be established in the present case for Claim 6, the Applicants respectfully request the withdrawal of the obviousness rejection of Claim 6.

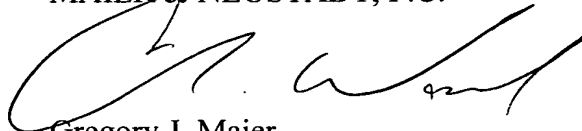
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Claim 7 is considered allowable for at least the reasons advanced for Claim 6 from which it depends. This claim is further considered allowable as it recites other features of the invention that are neither disclosed nor suggested by the applied references.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

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